

**What is claimed is:**

1           1.     A protective pad comprising:  
2           a shell having a concave interior surface and a convex outer surface  
3     adjoined by a perimeter edge;  
4           a pre-tensioned resilient padded membrane; and  
5           an elastic suspension arrangement adjoining said pre-tensioned resilient  
6     padded membrane about the perimeter edge of said shell to define a cavity  
7     between said shell and said pre-tensioned resilient padded membrane.

1           2.     A protective pad as recited in claim 1, wherein said pre-tensioned  
2     resilient padded membrane being stretched in multiple directions prior to being  
3     elastically suspended at said shell, and said elastic suspension arrangement further  
4     comprising a resilient bonding material, so that a trampoline-type unit is formed  
5     by said shell, pre-tensioned resilient padded membrane and elastic suspension  
6     arrangement.

1           3.     A protective pad as recited in claim 2, wherein said resilient bonding  
2     material is provided at an outer area of engagement between said shell and said  
3     pre-tensioned resilient padded membrane.

1           4.     A protective pad as recited in claim 2, wherein said resilient bonding  
2     material extends to or substantially covers an exterior of said shell.

1           5.     A protective pad as recited in claim 4, wherein said resilient bonding  
2     material is provided at an outer area of engagement of said shell with said pre-  
3     tensioned resilient padded membrane.

1           6.     A protective pad as recited in claim 2, wherein said resilient bonding  
2     material extends to or substantially covers said tensioned resilient padded  
3     membrane.

1           7.     A protective pad as recited in claim 6, wherein said resilient bonding  
2     material is provided at an outer area of engagement of said shell with said pre-  
3     tensioned resilient padded membrane.

1           8.     A protective pad as recited in claim 3, wherein said resilient bonding  
2     material is provided at an inner area of engagement of said shell with said pre-  
3     tensioned resilient padded membrane.

1           9.     A protective pad as recited in claim 8, wherein said resilient bonding  
2     material extends to an exterior of said shell.

1           10. A protective pad as recited in claim 2, wherein said shell further  
2     comprising an integral shell flange outwardly extending from an outer periphery  
3     thereof and configured for engaging said resilient bonding material.

1           11. A protective pad as recited in claim 10, wherein said resilient  
2     bonding material is provided at inner and outer areas of engagement of said flange  
3     with said tensioned resilient padded membrane.

1           12. A protective pad as recited in claim 10, wherein said resilient  
2     bonding material is sandwiched between said flange and said pre-tensioned  
3     resilient padded membrane.

1           13. A protective pad as recited in claim 8, wherein the resilient bonding  
2     material provided at said outer area of engagement of said shell and said padded  
3     membrane extends completely around an edge of said pre-tensioned resilient  
4     padded membrane.

1           14. A protective pad as recited in claim 8, wherein said padded  
2     membrane has an opening extending therethrough and configured for engaging a  
3     human joint.

1           15. A pad for protecting a joint of a human limb, comprising:

2 a shell having a convex outer surface, a concave inner surface having a  
3 contour complementing the joint of said human limb, and an outer edge adjoining  
4 said inner and outer surfaces;  
5 a pre-tensioned resilient padded membrane; and  
6 an elastic suspension arrangement adjoining said pre-tensioned resilient  
7 padded membrane about the edge of said shell to define a cavity between said  
8 shell and said pre-tensioned resilient padded membrane.

1 16. A joint pad as recited in claim 15, wherein a said tensioned resilient  
2 padded membrane being stretched in multiple directions prior to being suspended  
3 at said shell, said elastic suspension arrangement further comprises a resilient  
4 bonding material, so that a trampoline-type unit is formed by said shell, pre-  
5 tensioned resilient padded membrane and elastic suspension arrangement.

1 17. A joint pad as recited in claim 16, wherein said resilient bonding  
2 material is provided at an outer area of engagement of said shell with said pre-  
3 tensioned resilient padded membrane.

1 18. A joint pad as recited in claim 16, wherein said resilient bonding  
2 material is provided at an inner area of engagement of said shell with said pre-  
3 tensioned resilient padded membrane.

1            19.    A joint pad as recited in claim 18, wherein said resilient bonding  
2 material is provided at an outer area of engagement of said shell with said pre-  
3 tensioned resilient padded membrane.

1            20.    A joint pad as recited in claim 17, wherein said resilient bonding  
2 material extends to the convex outer surface of said shell.

1            21.    A joint pad as recited in claim 19, wherein said resilient bonding  
2 material extends to or covers the convex outer surface of said shell.

1            22.    A joint pad as recited in claim 19, wherein said resilient bonding  
2 material substantially covers said tensioned resilient padded membrane.

1            23.    A helmet comprising:  
2            a generally hemispherical shell having a convex outer surface and a  
3 concave inner surface adjoined by an edge;  
4            a pre-tensioned resilient padded membrane; and  
5            an elastic suspension arrangement adjoining said pre-tensioned resilient  
6 padded membrane about the edge of said shell to define a cavity between said  
7 shell and said pre-tensioned resilient padded membrane.

1           24.    A helmet as recited in claim 23, wherein said elastic suspension  
2   means further comprises a resilient bonding material.

1           25.    A helmet as recited in claim 24, wherein said resilient bonding  
2   material extends to or substantially covers said convex outer surface.

1           26.    A shoulder pad comprising:  
2           a shell having a convex outer surface, a concave inner surface and an edge  
3   defining a chest cover portion, a back cover portion and a neck notch between said  
4   chest cover portion and said back cover portion;  
5           a pre-tensioned resilient padded membrane; and  
6           an elastic suspension means adjoining said pre-tensioned resilient padded  
7   membrane about the edge of said shell to define a cavity between said shell and  
8   said pre-tensioned resilient padded membrane.

1           27.    A shoulder pad as recited in claim 26, wherein said elastic  
2   suspension arrangement further comprises a resilient bonding material.

1           28.    A shoulder pad as recited in claim 27, wherein said resilient bonding  
2   material extends to or substantially covers said convex outer surface of said shell.

1           29.    A method for fabricating a protective pad, comprising the steps of:

2 providing a resilient padded membrane;  
3 stretching said resilient padded membrane into a tensioned state;  
4 tensionally suspending said stretched resilient padded membrane in a  
5 transverse plane;  
6 positioning a shell over said tensionally suspended resilient padded  
7 membrane; and  
8 adjoining said shell to said tensioned padded membrane by an elastic  
9 suspension arrangement such that a cavity is formed between said shell and said  
10 tensionally-suspended resilient padded membrane.

1 30. A method as recited in claim 29, wherein in said step of stretching  
2 said padded membrane is stretched in multiple directions, and said elastic  
3 suspension means further comprises resilient bonding material, so that a  
4 trampoline-type unit is formed by said shell, pre-tensioned resilient padded  
5 membrane and elastic suspension arrangement.

1 31. A method as recited in claim 30, wherein said tensionally-suspended  
2 resilient padded membrane engages said shell, the method further comprising in  
3 the formation of said elastic suspension arrangement said resilient bonding  
4 material is provided at an outer area of engagement of said tensionally-suspended  
5 resilient padded membrane with said shell.

1           32.    A method as recited in claim 31, wherein the step of adjoining  
2 further comprising providing said resilient bonding material at an inner area of  
3 engagement of said tensionally-suspended resilient padded membrane with said  
4 shell.

1           33.    A method as recited in claim 32, wherein said tensionally-suspended  
2 resilient padded membrane has an outer surface, the method further comprising the  
3 step of providing said resilient bonding material on said outer surface.